

In the Claims:

1. (Currently Amended) A force-applying input device comprising:
a joystick operation section;
a position sensor ~~[[for]] to detecting~~ an operation state of the operation section;
an actuator ~~[[for]] to applying~~ an external force to the operation section; and
a control section ~~[[for]] to controlling~~ drive of the actuator based on a position
signal output from the position sensor, the control section to comput~~[[ing]]e~~ operation
amounts and operation directions of the operation section based on the position signal,
and control~~[[ling]]~~ the drive of the actuator, wherein,

when the operation section is operated in one direction from a start position, an
external force which increases with an increase in the operation amount is applied in a
direction opposite to the operation direction of the operation section until the operation
amount of the operation section reaches a predetermined operation amount,

when ~~[[the]]~~ an operation amount of the operation section reaches the
predetermined operation amount, ~~[[the]]~~ an external force corresponding to ~~that when~~
the predetermined operation amount is ~~reached~~ is applied in the direction opposite to
the operation direction of the operation section,

when the operation section is stopped, the external force applied to the operation
section is reduced with an increase in a returning amount of the operation section from
a stopping position of the operation section,

when the returning amount of the operation section reaches a predetermined
returning amount equal to the predetermined operation amount, the application of the
external force to the operation section is stopped, and

when the operation direction of the operation section is changed during the operation of the operation section, a direction and amount of application of ~~[[the]]~~ an external force is repeatedly computed to be applied to the operation section when a predetermined operation amount is reached, wherein the computed external force comprises ~~in which~~ a resultant having ~~[[of]]~~ a first component applied in ~~[[the]]~~ a direction opposite to the operation direction of the operation section prior to changing the operation direction and a second component applied in a direction opposite to the operation direction of the operation section after changing the operation direction ~~is equal to the external force corresponding to that applied to the operation section when the predetermined operation amount is reached~~ is repeatedly computed in order to apply the external force equal to the resultant in the computed external force application direction, the first component being gradually reduced and the second component being gradually increased with an increase in the operation amount of the operation section after changing the operation direction.

2. (Currently Amended) A force-applying input device according to Claim 1, wherein, when the operation section is operated in one direction from the start position, the following are computed in accordance with linear functions having slopes greater than 0: the increase in the external force until the operation amount of the operation section reaches the predetermined operation amount from the start position and the reduction in the external force until the returning amount of the operation section reaches the predetermined returning amount from the stopping position ~~are computed in accordance with linear functions having slopes greater than 0.~~

3. (Original) A force-applying input device according to Claim 1, wherein, when the operation direction of the operation section is changed during the operation of the operation section, the direction of application of the external force is computed in accordance with an exponential function having an exponent greater than 1.

4. (New) A force-applying input device comprising:

- a joystick operation section connected to a first end of a tilting lever, the tilting lever operably connected to a holding shaft;
- a swing arm positioned about a second end of the tilting lever to define directions of rotation of the tilting lever;
- a first actuator operably connected to the holding shaft;
- a second actuator operably connected to the swing arm, the first and second actuators to apply an external force to the operation section;
- a position sensor to detect an operation state of the operation section; and
- a control section to control application of the external force by the actuator based on a position signal output from the position sensor, the control section to compute operation amounts and directions of the operation section based on the position signal,

wherein when the operation direction of the operation section is changed during the operation of the operation section, a direction and amount of application of the external force is repeatedly computed, and comprises a resultant having a first component applied in a direction opposite to the operation direction of the operation section prior to changing the operation direction and a second component applied in a direction opposite to the operation direction of the operation section after changing the operation direction, the first component being gradually reduced and the second

component being gradually increased with an increase in the operation amount of the operation section after changing the operation direction.

5. (New) A force-applying input device according to Claim 4, wherein when the operation section is operated in one direction from a start position, an external force which increases with an increase in the operation amount is applied in a direction opposite to the operation direction of the operation section until the operation amount of the operation section reaches a predetermined operation amount.

6. (New) A force-applying input device according to Claim 5, wherein the increase in the external force corresponding to the increase in the operation amount is computed by at least a linear function having a slope greater than 0.

7. (New) A force-applying input device according to Claim 5, wherein when an operation amount of the operation section reaches the predetermined operation amount, an external force corresponding to the predetermined operation amount is applied in the direction opposite to the operation direction of the operation section.

8. (New) A force-applying input device according to Claim 7, wherein when the operation section is stopped, the external force applied to the operation section is reduced with an increase in a returning amount of the operation section from a stopping position of the operation section.

9. (New) A force-applying input device according to Claim 8, wherein the reduction in the external force corresponding to the increase in the returning amount of

the operation section is computed by at least a linear function having a slope greater than 0.

10. (New) A force-applying input device according to Claim 8, wherein when the returning amount of the operation section reaches a predetermined returning amount equal to the predetermined operation amount, the application of the external force to the operation section is stopped.

11. (New) A force-applying input device according to Claim 4, wherein the direction of application of the external force is computed in accordance with an exponential function having an exponent greater than 1.